

REMARKS

Applicant notes with appreciation the Office's indication that claims 1-31, 42-60 and 69-98 are allowed and that claims 33-37, 40, 41 and 66-68 would be allowable if rewritten in independent form. In view of the following remarks, Applicant hereby requests further examination and reconsideration of the application, and allowance of claims 1-98.

The Office has rejected claims 32 and 61 - 63 under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 4,065,718 to Attwood ("Attwood") in view of Kesler et al., "Experiments in Joint Doppler and Elevation Estimation in the Near Field", IEEE International Conference on Acoustics, Speech, and Signal Processing, April 1987, vol. 12, pp. 1778 - 1781 ("Kesler"), has rejected claims 38 and 64 under 35 U.S.C. 103(a) as being unpatentable over Attwood in view of Kesler and further in view of US Patent No. 5,329,547 to Ling ("Ling"), and has rejected claims 39 and 65 under 35 U.S.C. 103(a) as being unpatentable over Attwood, Kesler, and Ling and further in view of US patent No. 6,681,252 to Schuster et al. ("Schuster"). The Office asserts that Attwood shows transmitting a doublet into the environment in figure 1, a receiving unit for receiving the doublet in figure 2, and that signal 34 of figure 2 shows extracting information from the doublet. The Office has acknowledged that Attwood does not teach or suggest time scaling, including forming a doublet based on time scales, but asserts that Kesler discloses in Figure 2 and in lines 13-23 in column 2 at page 1779, and in the abstract in column 1 at page 1778, extracting information from the doublet based on time scales.

Neither Attwood nor Kesler, alone or in combination, teach or suggest, "applying one of a plurality of time scales to one of a pair of substantially matched base signals . . . combining the time scaled base signal with the other one of the pair of base signals to form a doublet . . . extracting information from the doublet based on the one of the plurality of time scales which was applied" as recited in claim 32, or "extracting information from the doublet based on one of a plurality of time scales which was applied to the doublet" as recited in claim 61.

As the Office has acknowledged, Attwood does not teach or suggest time scaling, however contrary to the Office's assertions Kesler does not teach or suggest time scaling as claimed. Kesler discloses at lines 19-22 in column 2 on page 1778, a processor which first removes a clutter component from a received signal and then estimates a target Doppler frequency, f_d . As disclosed at lines 3-7 in column 1 on page 1779 in Kesler, there are two options for this preprocessor for clutter suppression and Doppler estimation: (1) an ALE-based preprocessor; and (2) a clutter suppression filter processor. The Office has cited

to the ALE-based preprocessor shown in Figure 2 and described at column 2, lines 13-23, on page 1779 in Kesler as teaching the extraction of information from the doublet based on time scales. However, contrary to the Office's assertions, the ALE-Based Preprocessor in Kesler does not teach extracting information based on time scaling. The Office's attention is respectfully directed to Figure 2 and to lines 13-21 in column 2 at page 1779 in Kesler which illustrates and discloses that the ALE-based preprocessor uses a selected delay (τ_{Δ}) and adaptive filtering in the elimination of clutter components from a signal, but not time scaling as claimed. Additionally, as illustrated in Figure 2 and described at lines 21-23 in column 2 at page 1779 in Kesler, a peak at the Doppler frequency is extracted by the magnitude squared of the filter weights, but again there is no teaching or suggestion here of any time scaling.

Applicant also respectfully directs the Office's attention to the abstract in column 1 at page 1778 in Kesler, and in particular to the phrase which appears to have been underlined by the Office, "The demodulators' outputs are converted back to the time domain . . ." The conversion of an output from the frequency domain to the time domain is not time scaling and no where in the Abstract of Kesler is time scaling suggested or taught.

Similarly, neither Ling cited by the Office for disclosing information comprising a message embedded prior to the transmission nor Schuster cited by the Office for disclosing information comprising imaging data embedded prior to the transmission in the rejection of claims 38, 39, 64, and 64 under 35 U.S.C. 103(a), alone or in any combination with Attwood, Kesler, and each other, teach or suggest time scaling as claimed.

By way of example only, one embodiment in the above-identified patent application in which time scaling is applied to the base signals is illustrated in FIG. 2 and is described on page 12, lines 5-9 as, "In this particular embodiment . . . D/A converters 20 and 22 along with controlled oscillators 24 and 26 are used to affect the relative time-scaling offset between base signals. The two controlled oscillators run at frequencies that are "offset" by the applied time-scale offset." As discussed at page 9, line 29 to page 10, line 3, in the above-identified patent application, "The present invention's added parameter of time-scale offset is easy and efficient to implement, and it adds a whole new dimension for embedding/extracting information and maintaining signal security. The time-scale offset also enables controllable spatial resolution for enhanced performance in extracting environmental information. By simultaneously employing multiple time-scale offsets in the same transmission, the system can simultaneously achieve extreme robustness and high resolution in range, angles and velocity." Additionally, as discussed at page 10, lines 14-16 in the

above-identified patent application, "The time-scale offset of this invention is further exploited to achieve accurate and precise range/angle/velocity estimates for probing/imaging applications."

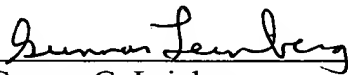
Accordingly, in view of the foregoing remarks, the Office is respectfully requested to reconsider and withdraw the rejection of claims 32 and 61. Since claims 33-41 depend from and contain the limitations of claim 32 and claims 62-68 depend from and contain the limitations of claim 61, they are distinguishable over the cited references and patentable in the same manner as claims 32 and 61.

The Office has objected to claims 33-37, 40, 41, and 66-68 as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In view of the foregoing remarks with respect to the independent claims 32 and 61, no further amendment is believed to be necessary and these claims are believed to be in condition for allowance. Accordingly, the Office is respectfully requested to reconsider and withdraw this objection.

In view of all of the foregoing, Applicant submits that this case is in condition for allowance and such allowance is earnestly solicited.

Respectfully submitted,

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